



Environmental Energy Technologies Division

Lawrence Berkeley National Laboratory

BEDES - Grouping Structure Options

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- Most TWG members appeared to feel strongly or be leaning toward a flat structure
 - it is more extensible, easier to modify, expand and utilize for different purposes
 - However, there was a range of opinions (and many questions) about what that meant in practice.
 - Using Tag approach might be an option

Flatter

- **More fields, less complex structure**
- Pros:
 - Simpler specification
 - Easier to modify and expand
 - More flexible to apply in different applications based on use cases
- Cons:
 - More fields
 - Relies more on users or software implementation to ensure data entry is complete and that it can be “rolled up” (e.g. you always want ‘mammal’ if you have ‘cat’)
 - Potential for non-logical combinations, (shouldn’t be able to say ‘cat,’ and ‘reptile’)

More Hierarchical

- **Less fields, more complex structure**
- Pros:
 - Less fields to fill in, data is more compact
 - Easier to “roll up” data
 - Forces user to make logical choices
 - Can help ensure completeness of data entry
- Cons:
 - hard to anticipate everything and describe all possible combinations
 - Results in much more complex specification
 - The question of order of levels of hierarchy becomes important

Option 1. Totally flat

Animal Type
{Enumerated List}
- Mammal
- Reptile
- Insect
etc.

Animal Sub-Type
{Enumerated List}
- Cat
- Dog
- Horse
- Lizard
- Snake
- Turtle
- etc.

Tail
{Boolean}
- Yes
- No

Legs
{integer}
- e.g. 4

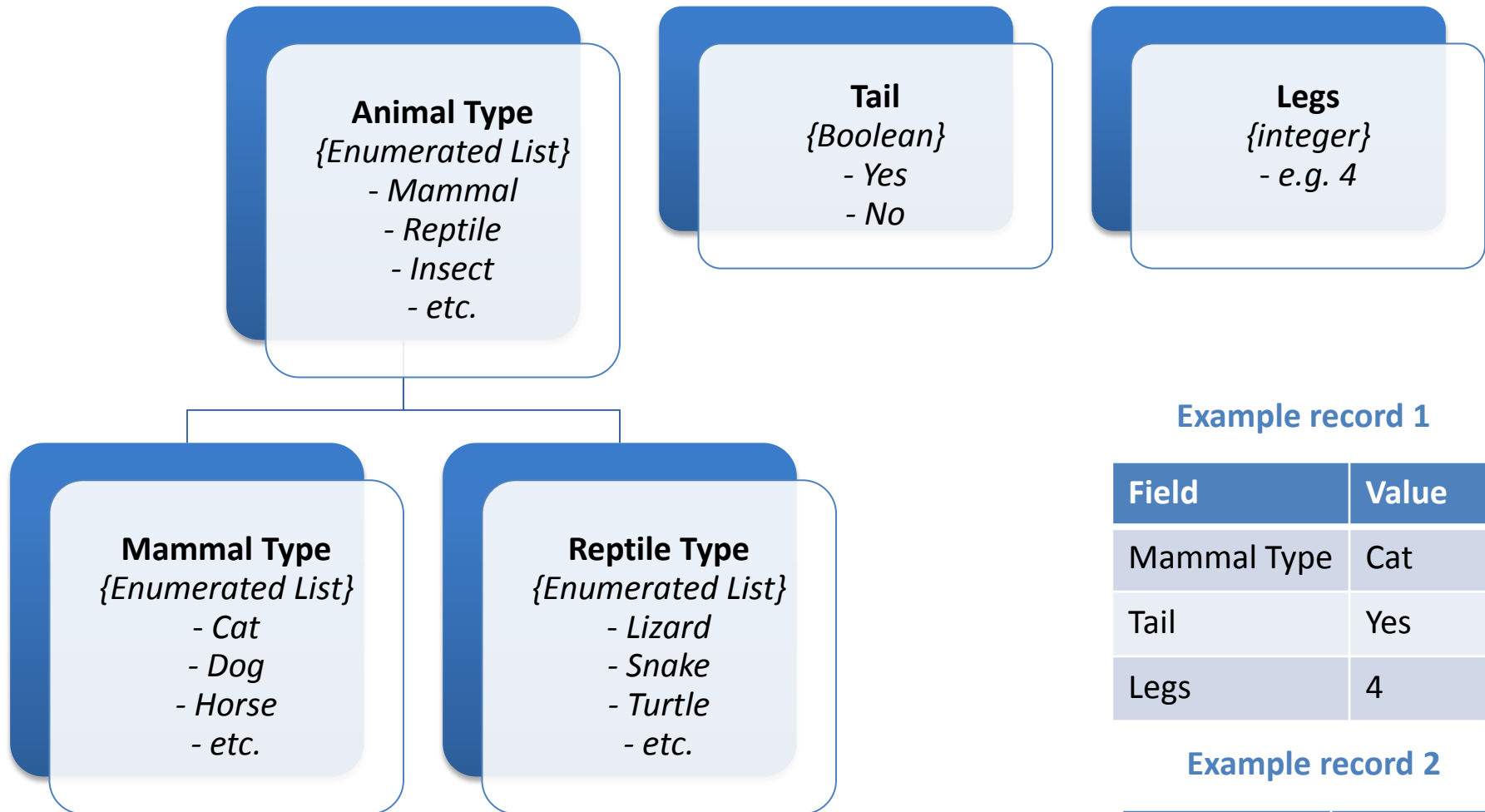
KEY:

Data field name
{Data field type}
- Example value

Example record

Field	Value
Animal Type	Mammal
Animal Sub-Type	Cat
Tail	Yes
Legs	4

Option 2. Hierarchical only when describing the same info at a more granular level



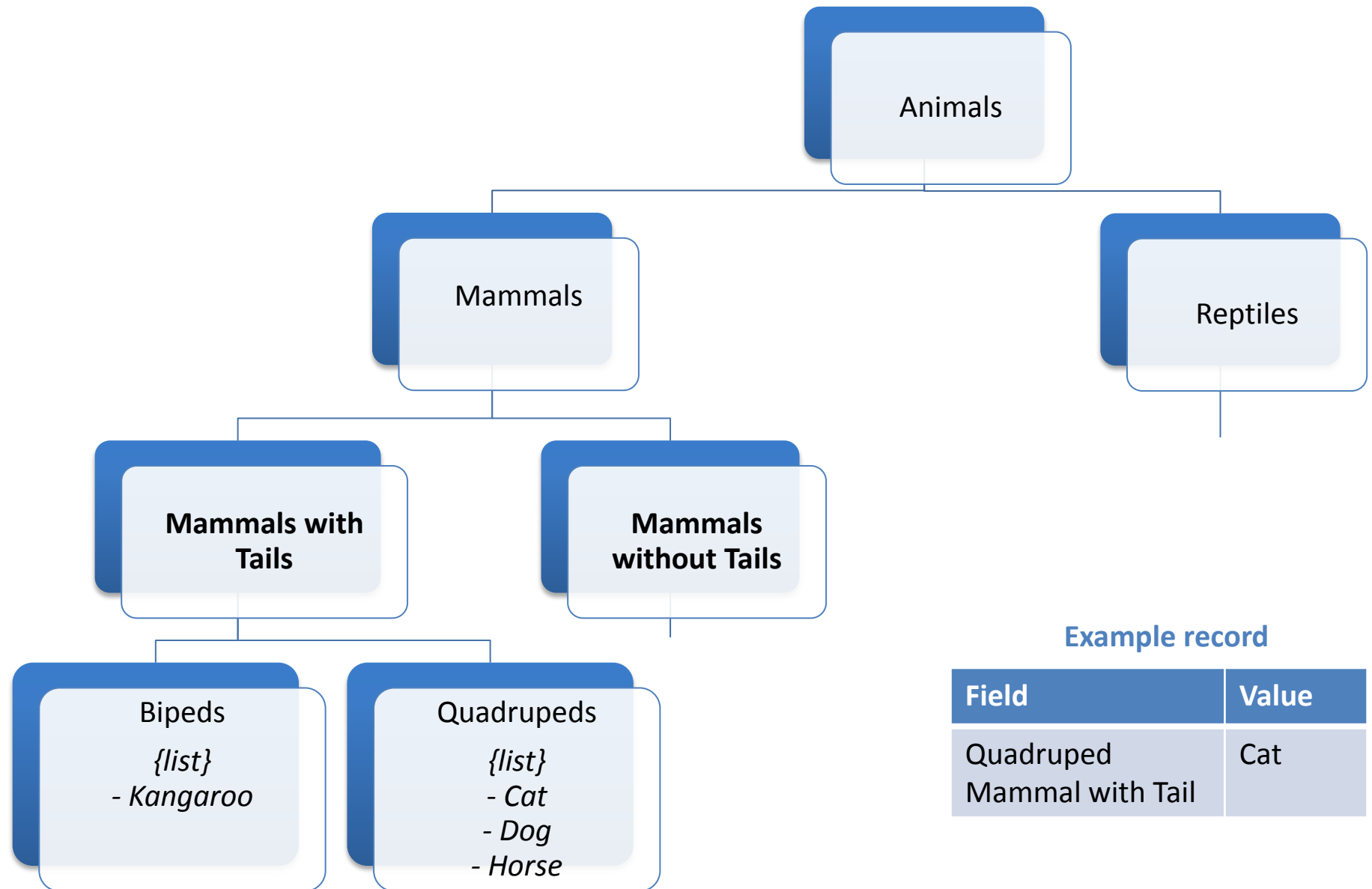
Example record 1

Field	Value
Mammal Type	Cat
Tail	Yes
Legs	4

Example record 2

Field	Value
Animal Type	Mammal
Legs	2

Option 3. Full hierarchy



Summary: Non-Building Example Grouping Options

1. Totally Flat

Animal type - {Enum. List}

- Mammal
- Reptile
- Insect

Animal Subtype - {Enum. List}

- Cat
- Dog
- Horse
- Lizard
- Snake

Tail {Boolean}

- Yes
- No

Legs {integer}

- e.g. 4

2. Hierarchical subtypes, but separate attributes

Animal Type {Enum List}

- **Mammal** {Enum List}
 - Cat
 - Dog
 - Horse
- **Reptile** {Enum List}
 - Lizard
 - Snake

Tail {Boolean}

- Yes
- No

Legs {integer}

- e.g. 4

3. Fully Hierarchical

Animal Type

- Mammal
 - With Tail
 - **Biped** {Enum List}
 - Kangaroo
 - **Quadruped**
 - Cat
 - Dog
 - Horse
 - Without Tail
 - **Biped**
 - Human
 - **Quadruped**
 - Sloth
- Reptile
 - With Tail
 - Etc

Grouping Structure - Current

Current structure – technically flat but has an implied hierarchy

<div>Site</div> <div>Residential Facility</div> <div>Commercial Facility</div> <div>Activity Area</div>	
Activity Type	A space or area within a building designated for a particular activity
	Vacant
	Commercial - Uncategorized
	Office - Uncategorized
	Office - Administrative/professional
	Office - Bank/other financial
	Office - Government
	Office - Medical non diagnostic
	Office - Mixed use
	Office - Other
	Laboratory
	Warehouse - Uncategorized
	Warehouse - Refrigerated
	Warehouse - Non-refrigerated
	Warehouse - Distribution/Shipping center
	Warehouse - Self-storage
	Food Sales
	Public Assembly - Uncategorized
	Public Assembly - Entertainment/culture
	Public Assembly - Movie Theater
	Public Assembly - Drama theater
	Public Assembly - Large Hall

Grouping Structures - Options

Option 1 (Flat)

Commercial Activity Type {List}

- Office
- Warehouse
- Retail

Commercial Sub-Type – {List}

- Admin/Professional
- Bank
- Government
- Self Storage
- Distribution Center
- Big Box
- Shopping Mall

Refrigerated {Boolean}

- Yes
- No

Conditioned Floor Area {integer}

- e.g. 100,000 SF

Option 2 - hybrid

Commercial Type {List}

- **Office** {List}
 - Admin/Professional
 - Bank
 - Government
- **Warehouse** {List}
 - Self Storage
 - Distribution Center
- **Retail**
 - Big Box
 - Shopping Mall

Refrigerated {Boolean}

- Yes
- No

Conditioned Floor Area {integer}

- e.g. 100,000 SF

Option 3 – Full Hierarchy

Activity Type

- Office
- Retail
- Warehouse
 - **Self Storage** {List}
 - Refrigerated
 - Non-Refrigerated
 - **D/S Center** {List}
 - Refrigerated
 - Non-Refrigerated

Grouping Structures – Options – BEDES test mod

Microsoft Excel window: TWG2-Alternate_Grouping_Examples.xlsx

Warehouse -

Home Layout Tables Charts SmartArt Formulas Data Review Developer

Font: Calibri (Body), 12

Alignment: Wrap Text

Number: General

Format: Conditional Formatting, Styles

Cells: Actions

Themes: Themes

Formula Bar: fx

	A	B	C	D	E	F
1	BEDES Example - Commercial Facility & Activity Area Sections with a specific Sub-types added as needed for Facility Type and Activity Type enumerations					
2	Data Fields					
3	Commercial Facility					
68	Primary facility Type	A space or area within a building designated for a particular activity	CONSTRAINED LIST			
95	Office Sub-type	Office types	CONSTRAINED LIST			
103	Miscellaneous Sub-type	Miscellaneous types	CONSTRAINED LIST			
106	Warehouse Sub-type	Warehouse types	CONSTRAINED LIST			
112	Public Safety Sub-type	Public Safety types	CONSTRAINED LIST			
118	Health Care Sub-type	Health Care types	CONSTRAINED LIST			
126	Public Assembly Sub-type	Public Assembly types	CONSTRAINED LIST			
140	Education Sub-type	Education types	CONSTRAINED LIST			
147	Food Service Sub-type	Food Service types	CONSTRAINED LIST			
153	Lodging Sub-type	Lodging types	CONSTRAINED LIST			
159	Retail Sub-type	Retail types	CONSTRAINED LIST			
167	Service Sub-type	Service types	CONSTRAINED LIST			
295	Activity Area					
296	Activity Type	A space or area within a building designated for a particular activity	CONSTRAINED LIST			
324	Office Sub-type	Office types	CONSTRAINED LIST			
332	Miscellaneous Sub-type	Miscellaneous types	CONSTRAINED LIST			
335	Warehouse Sub-type	Warehouse types	CONSTRAINED LIST			
341	Public Safety Sub-type	Public Safety types	CONSTRAINED LIST			
347	Health Care Sub-type	Health Care types	CONSTRAINED LIST			
355	Public Assembly Sub-type	Public Assembly types	CONSTRAINED LIST			
369	Education Sub-type	Education types	CONSTRAINED LIST			
376	Food Service Sub-type	Food Service types	CONSTRAINED LIST			
382	Lodging Sub-type	Lodging types	CONSTRAINED LIST			
388	Retail Sub-type	Retail types	CONSTRAINED LIST			
396	Service Sub-type	Service types	CONSTRAINED LIST			
446						
447						

One Sub-type_ComFacility Specific Sub-types_ComFacility

Tagged descriptions concept for consideration

ActivityArea		
ActivityType	A space or area designated for a particular activity within a Commercial Facility within a Site.	CONSTRAINED LIST
		Vacant
		Commercial
		Office
		Laboratory
		Warehouse
		Food Sales
		Convenience Store
		Convenience Store with Gas Station
		Grocery Store/food market
		Public Safety
		Health Care
		Religious worship
		Public Assembly
		Education
		Food Service
		Nursing Home

- Use Reference Tags as a way to define structural relationships between field names within a relatively flat schema
- Reference Tags can help the reader (human or software parser) more easily see inter-field associations in a many-to-many relationship
- The tagged field name descriptions can better inform the reader on which dependent fields are needed for a primary field being considered

- What is the best Grouping/Hierarchy Structure for the next BEDES version?
- Would it be useful to have BEDES category tags imbedded within the field name descriptions?